



## Zoonotic & Environmentally Transmitted Diseases (ZED) Steering Committee

### WASO Contacts

Integrated Pest  
Management (IPM)  
202-513-7183 (East)  
970-225-3542 (West)

Public Health  
202-513-7226

Risk Management  
202-513-7224

Wildlife Health  
970-225-3593

### Web Resources

#### IPM Program:

<http://www1.nrintra.nps.gov/ipm/index.cfm>

#### Public Health:

[http://www.nps.gov/public\\_health/intra/](http://www.nps.gov/public_health/intra/)

#### Risk Management:

<http://www.nps.gov/riskmgmt/>

#### Wildlife Health:

<http://www1.nrintra.nps.gov/BRMD/nativespecies/wildlifehealth/index.htm>

#### CDC:

<http://www.cdc.gov/>

#### State and Local Health Departments:

<http://www.cdc.gov/mmwr/international/relres.html>

## Hantavirus Risk Reduction

### General Information

In 1993, a previously unknown disease, hantavirus pulmonary syndrome (HPS), was identified among residents of the southwestern United States. HPS was subsequently recognized throughout the contiguous United States and the Americas. As of May 7, 2003, a total of 336 cases of HPS have been identified in 31 states, with a case fatality rate of 38%.

#### Source and Transmission of the Virus

All hantaviruses known to cause HPS are carried by rats and mice. The deer mouse, which is common and widespread throughout much of the United States, is the primary host. Other hosts include the white-footed mouse, cotton rat, and rice rat. The spread of the hantavirus to humans occurs most commonly by inhaling airborne dust that has been contaminated with saliva, urine, or feces from infected mice and rats. One may also become infected by contacting contaminated material with broken skin or eyes, a bite from an infected rodent, or possibly from eating contaminated food or water. To date, no person-to-person transmission has been associated with any HPS cases in the United States.

It is recommended that you avoid contact with all wild and commensal mice and rats encountered throughout the United States, and also the saliva, urine, and feces from those rodents.

#### Symptoms of HPS

Early symptoms include fatigue, fever, and muscle aches, especially the large muscle groups—thighs, hips, back, and sometimes the shoulders. About half of all HPS patients also experience headaches, dizziness, chills, and/or abdominal problems, such as nausea, vomiting, diarrhea, and abdominal pain. The first symptoms generally develop between 1 and 5 weeks after exposure to infected rodents and their droppings. Four to 10 days after the initial phase of illness, additional symptoms appear, including coughing and shortness of breath. Earache, sore throat, and rash are **very uncommon**, and their occurrence may help in differentiating HPS from common ailments such as influenza and other respiratory viruses.

#### Prevention of HPS

Rodent control, good sanitary practices, and safe cleanup of potentially contaminated materials remain the primary methods of HPS prevention. Eradicating mice and rats that carry hantaviruses is neither feasible nor desirable because of their wide distribution and their importance in natural ecosystems. An Integrated Pest Management Specialist or Public Health Consultant should be contacted for persistent or severe rodent infestations.

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### **Precautions for Inside the Home**

- Keep all food, pet food, trash, and water covered and stored in rodent-proof containers.
- Wash dishes after use, and remove leftover food; and clean up all spilled food.
- Frequently dispose of trash and garbage, and pick up or eliminate clutter.
- Deny rodents all access to moisture. Fix leaks and insulate pipes to prevent condensation.
- Keep exterior doors and windows closed unless protected by tight-fitting metal screens.
- Use spring-loaded snap traps in the structures. Check traps frequently.
- Use of live traps or sticky boards is not recommended. Their use may increase risk of contact with contaminated material from infected rodents.
- Look for and seal all gaps and holes that are  $\geq \frac{1}{4}$  -inch in diameter.
- Use rubber gloves during cleanup of contaminated areas.
- Spray dead rodents and contaminated areas with a disinfectant or chlorine solution (1  $\frac{1}{2}$  cups bleach in 1 gallon water) and wait 10 minutes before beginning cleanup. A contact time of 10 minutes is recommended to ensure deactivation of the virus.
- Disinfect gloves after use.

### **Precautions for Outside the Home**

- Place woodpiles and stacks of lumber, bricks, stones, or other materials  $\geq 100$  feet from the house.
- Store grains and animal feed in metal or other rodent-proof containers.
- Remove from the vicinity of buildings any food sources that might attract rodents.
- Keep pet food covered and stored in rodent-proof containers. Allow outdoor pets only enough food for each meal, then store or discard any remaining food from feeding dishes.
- Avoid using bird feeders near the home.
- Dispose of garbage and trash in rodent-proof containers with tight-fitting lids.
- Haul away trash, abandoned vehicles, discarded tires, and other items that might serve as rodent nesting sites.
- Mow grass closely, and cut or remove brush and dense shrubbery to a distance of at least 100 feet from the home.
- Use concrete foundations in new construction of sheds, barns, and outbuildings. The top of the foundation should be at least 6 inches above ground level.
- Place spring-loaded snap traps in outbuildings. Check frequently and replace bait as needed.
- Look for and seal all gaps and holes outside the home that are  $\geq \frac{1}{4}$  -inch in diameter.

### **Reference**

All About Hantavirus, National Center for Infectious Disease Control and Prevention, Department of Health and Human Services (<http://www.cdc.gov/ncidod/diseases/hanta/hps/index.htm>)